AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) A color conversion table generating method wherein a plurality of patches outputted from a printing device are subjected to color measuring and a color conversion table which defines a correspondence between color component values ~~of various colors~~ used in another image device and ink value data corresponding to ink quantities of inks ~~in individual ink colors~~ used in the printing device is generated based on a result of the color measuring, the method comprising:

~~extracting a number of reference values smaller than a total number of gradations in said ink value data with respect to each ink color and combining the reference values thereby to create~~ creating patch data which specifies said plurality of <u>ink quantities of inks with said ink value data</u>~~patches~~;

<u>printing said plurality of patches after</u> performing half tone processing where ~~the~~ <u>said</u> patch data is input and transformed into half tone image data which indicates a presence or absence of ink dots ~~to print said plurality of patches~~; and

generating said color conversion table based on color measuring data obtained by ~~subjecting said plurality of printed patches to~~<u>said</u> color measuring <u>of said plurality of printed patches</u>,

wherein

said patch data are so defined as to increase the number of patches in a low-lightness range than the number of patches in a high-lightness range by a first gamma correction process so that interpolation can be carried out with high accuracy in the low-lightness range~~the colors in said patch data are colors obtained by extracting a number of reference values before correction smaller than the total number of gradations in predetermined gradation values before correction, from the gradation values before correction, with respect to each ink color and combining the reference values before correction, carrying out correction for interpolation accuracy enhancement to increase the reference values before correction, and thereby bringing the magnitude of values after the correction and the ink quantity into substantially linear correspondence with each other~~;

~~wherein~~

said ink value data is defined so ~~that a gradation value which is an integral value existing in a predetermined range of value and corresponds to a higher-lightness range will be reduced in an ink recording rate corresponding to a unit variation in that gradation value as compared with gradation values corresponding to a lower-lightness range~~as to decrease an ink quantity change rate in the high-lightness range than in the low-lightness range by a second gamma correction process so that resolution in the high-lightness range can be more enhanced than in the low-lightness range;

and ~~wherein~~

~~in~~ said half tone processing, which represents gradations by a count of dots recorded per unit area, adjusts the count of dots, while taking into account a fractional portion, when an

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<u>inverse gamma correction is applied to said ink value data, the inverse gamma correction</u>

<u>corresponding to the second gamma correction</u> ~~gradations are represented by adjusting a count~~

~~of dots recorded per unit area and one step-variation in gradation results in a large number of~~

~~steps in dot variation, thus subtle variation which is substantially equivalent to a fractional~~

~~portion is represented, and ink quantities corresponding to the reference values in said patch data~~

~~are interpreted according to a definition of the gradation values, while keeping the subtle~~

~~variation which is substantially equivalent to the fractional portion, to generate said half tone~~

~~image data.~~

2. (previously presented) The color conversion table generating method according to Claim 1, wherein said ink value data is defined by allocating the total number of gradations to part of the range of values of said ink recording rate.

Claims 3-6 (canceled).

7. (currently amended) A print controller which refers to a color conversion table <u>generated by the method in claim 1</u>~~which defines a correspondence between ink value data~~ ~~which specifies ink quantities of inks in individual colors used in a printing device and color~~ ~~component values of various colors used in another image device~~, and creates print data which indicates output images on the printing device from image data which indicates display images on the image device and causes a print operation to be performed~~, the controller comprising:~~

~~an image data acquiring unit that acquires image data where a color at each pixel in a matrix pattern is rendered with gradations with respect to images on said another image device;~~

~~a color converting unit which extracts gradation values where an ink quantity and a magnitude of gradation values are in substantially linear correspondence with each other with respect to each ink color and combines the gradation values to create first gradation value data, subjects the first gradation value data to correction for resolution enhancement with a higher rate of increase applied to a gradation value corresponding to a high-lightness range than to gradation values corresponding to a low-lightness range to obtain said ink value data, subjects the ink value data to half-tone processing, taking into account deviations equivalent to fractional portions obtained when correction inverse to said correction for resolution enhancement is carried out, and performs the print operation;~~

~~a color conversion table generating unit that generates a color conversion table where said ink value data and the color component values of various colors used in said another image device are in correspondence with each other based on color measuring data obtained by subjecting the result of the print operation to color measuring, said first gradation value data being extracted beforehand so that colors in the low-lightness range will be larger in number than colors in the high-lightness range so as to compensate the resolution which is relatively degraded in the low-lightness range by said correction for resolution enhancement by interpolation accuracy, and said color converting unit refers to the thus generated color conversion table to color-convert said image data into corresponding ink value data;~~

~~a half tone processing unit for interpreting ink quantities indicated by the ink value data from the color-converted ink value data and transforming the ink quantities into pseudo half tone data where gradations are represented by a recording density of ink droplets recorded on a printing medium, wherein in said half tone processing, gradations are represented by adjusting a count of dots recorded per unit area, and one-step variation in gradation results in a large number of steps in dot variation, thus subtle variation which is substantially equivalent to a fractional portion is represented;~~

~~a print data creating unit which creates print data for driving and causing the printing device to discharge ink droplets according to the recording density specified by said pseudo half tone data with respect to each pixel; and~~

~~a print data outputting unit that outputs the print data to the printing device~~.

8. (currently amended) A color conversion table generator which generates a color conversion table according to the method defined in claim 1 ~~which defines a correspondence between ink value data which specifies ink quantities of inks in individual colors used in a printing device and color component values of various colors used in another image device, the generator comprising:~~

~~a first gradation value data acquiring unit that acquires first gradation value data obtained by extracting gradation values where an ink quantity and a magnitude of gradation values are in substantially linear correspondence with each other with respect to each ink color and combining the gradation values;~~

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~~an ink value data acquiring unit that subjects the first gradation value data to correction for resolution enhancement with a higher rate of increase applied to a gradation value corresponding to a high-lightness range than to gradation values corresponding to a low-lightness range, to acquire a result of the correction as said ink value data;~~

~~a print operation performing unit that performs half-tone processing, wherein in said half-tone processing, gradations are represented by adjusting a count of dots recorded per unit area, and one-step variation in gradation results in a large number of steps in dot variation, thus subtle variation which is substantially equivalent to a fractional portion is represented, said print operation performing unit taking into account deviations equivalent to fractional portions obtained when the ink value data is subjected to correction inverse to said correction for resolution enhancement to perform a print operation;~~

~~a print result color measuring unit that subjects the result of the print operation to color measuring; and~~

~~a color conversion table generating unit that generates a color conversion table where said ink value data and the color component values of various colors used in said another image device are in correspondence with each other based on color measuring data obtained by subjecting a result of the print operation to color measuring,~~

~~wherein~~

~~said first gradation value data is extracted beforehand so that colors in the low-lightness range will be larger in number than colors in the high-lightness range so as to~~

~~compensate the resolution which is relatively degraded in the low-lightness range by said~~

~~correction for resolution enhancement by interpolation accuracy.~~

9. (currently amended) A computer-readable medium with a color conversion table

generating program recorded thereon to have a computer carry out a method for generating a

color conversion table <u>according to the method defined in claim 1</u>~~which defines a~~

~~correspondence between ink value data which specifies ink quantities of inks in individual colors~~

~~used in a printing device and color component values of various colors used in another image~~

~~device, the method comprising:~~

~~————— acquiring first gradation value data obtained by extracting gradation values where~~

~~an ink quantity and a magnitude of the gradation values are in substantially linear~~

~~correspondence with each other with respect to each ink color and combining the gradation~~

~~values;~~

~~————— subjecting the first gradation value data to correction for resolution enhancement~~

~~with a higher rate of increase applied to a gradation value corresponding to a high-lightness~~

~~range than to gradation values corresponding to a low-lightness range and acquiring a result of~~

~~the correction as said ink value data;~~

~~————— performing half tone processing, wherein in said half tone processing, gradations~~

~~are represented by adjusting a count of dots recorded per unit area , and one-step variation in~~

~~gradation results in a large number of steps in dot variation, thus subtle variation which is~~

~~substantially equivalent to a fractional portion is represented, said half tone processing taking~~

~~into account deviations equivalent to fractional portions obtained when the ink value data is~~

~~subjected to correction inverse to said correction for resolution enhancement, and performing a~~

~~print operation;~~

~~subjecting the result of the print operation to color measuring; and~~

~~generating a color conversion table where said ink value data and the color~~

~~component values of various colors used in said another image device are in correspondence~~

~~with each other based on color measuring data obtained by subjecting a result of the print~~

~~operation to color measuring; wherein~~

~~said first gradation value data is extracted beforehand so that colors in the low-~~

~~lightness range will be larger in number than colors in the high-lightness range so as to~~

~~compensate the resolution which is relatively degraded in the low-lightness range by said~~

~~correction for resolution enhancement by interpolation accuracy.~~

Claim 10 (canceled).

11. (currently amended) A correspondence definition data ~~creating~~ generating method

wherein a plurality of patches outputted from a printing device are subjected to color measuring,

and a correspondence definition data which defines a correspondence between color component

values ~~of various colors~~ used in another image device and gradation values corresponding to ink

quantities of inks ~~in individual colors~~ used in the printing device is created based on a result of

the color measuring, the method comprising:

creating patch data which specifies said plurality of ink quantities of inks with said gradation values~~extracting a number of reference values smaller than the total number of gradations in gradation values corresponding to said ink quantities with respect to each ink color and combining the reference values thereby to create patch data which specifies said plurality of patches~~;

printing said plurality of patches after performing half tone processing where ~~the~~ said patch data is input and transformed into half tone image data which indicates a presence or absence of ink dots ~~to print said plurality of patches~~; and

generating~~creating~~ said correspondence definition data based on color measuring data obtained by ~~subjecting~~ said color measuring of said plurality of printed patches ~~to color measuring~~,

wherein

~~gradation values corresponding to said ink quantities are so defined that a gradation value which is an integral value existing in a predetermined range of values and corresponds to a high-lightness range will be reduced in an ink recording rate corresponding to a unit variation in that gradation value as compared with gradation values corresponding to a low-lightness range~~said patch data are so defined as to increase a number of patches in a low-lightness range than a number of patches in a high-lightness range by a first gamma correction process so that interpolation can be carried out with high accuracy in the low-lightness range;

~~and wherein~~

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~~in said half tone processing, gradations are represented by adjusting a count of~~ ~~dots recorded per unit area, and one-step variation in gradation results in a large number of steps~~ ~~in dot variation, thus subtle variation which is substantially equivalent to a fractional portion is~~ ~~represented, and ink quantities corresponding to reference values in said patch data are~~ ~~interpreted according to a definition of the gradation values, while keeping the subtle variation~~ ~~which is substantially equivalent to the fractional portion, to generate said half tone image~~ ~~data~~said gradation values are so defined as to decrease an ink quantity change rate in the high-lightness range than in the low-lightness range by a second gamma correction process, so that resolution in the high-lightness range can be more enhanced than in the low-lightness range, and

said half tone processing, which represents gradations by a count of dots recorded per unit area, adjusts the count of dots, while taking into account a fractional portion, when an inverse gamma correction is applied to said gradation values, the inverse gamma correction corresponding to the second gamma correction.

12. (currently amended) The correspondence definition data creating method according to Claim 11, wherein said gradation values corresponding to ink quantities are defined by allocating ~~a~~ the total number of gradations to part of the range of value of ink recording rate.

Claims 13-17 (canceled).

18. (currently amended) A print controller which refers to a correspondence definition

data created by the method of claim 11, which defines a correspondence between ink value data

which specifies ink quantities of inks in individual colors used in a printing device and color

component values of various colors used in another image device, and creates print data which

indicates output images on the printing device from image data which indicates display images

on the image device and causes a print operation to be performed, the controller comprising:

an image data acquiring unit that acquires image data where the color at each

pixel in a matrix pattern is rendered with gradations with respect to images on said another image

device;

a color converting unit which performs a print operation with a plurality of pieces

of ink value data which specify said ink quantities of inks in individual colors, obtained by

correcting first gradation value data where an ink quantity and a magnitude of gradation values

are in substantially linear correspondence with each other with a higher rate of increase applied

to a gradation value corresponding to a high-lightness range than to gradation values

corresponding to a low-lightness range; refers to correspondence definition data where said ink

value data and color component values of various colors used in said another image device are in

correspondence with each other, based on color measuring data obtained by subjecting a result of

the print operation to color measuring; and color-converts said image data into corresponding ink

value data;

a half tone processing unit which interprets ink quantities indicated by the ink

value data from the color-converted ink value data and transforms the ink quantities into pseudo

~~half tone data where gradations are represented by a recording density of ink droplets recorded~~

~~on a printing medium, wherein in said half tone processing, gradations are represented by~~

~~adjusting a count of dots recorded per unit area, and one-step variation in gradation results in a~~

~~large number of steps in dot variation, thus subtle variation which is substantially equivalent to a~~

~~fractional portion is represented;~~

~~a print data creating unit which creates print data for driving and causing the~~

~~printing device to discharge ink droplets according to the recording density specified by said~~

~~pseudo-half tone data; and~~

~~a print data outputting unit which outputs the print data to the printing device.~~

Claims 19-22 (canceled).